2+ Series

Programmable DC Power Supplies 200W/400W/600W/800W in 2U Built-in USB, RS-232 & RS-485 Interface

Optional Interface: LAN IEEE488.2 SCPI (GPIB) Multi-Drop Isolated Analog Programming



TDK·Lambda

TDK-Lambda

Features Include:

- High Power Density 200W/400W/600W/800W in 2U: 3.5 Inch (89mm) height
- Wide Range Input (85-265Vac continuous)
- Active Power Factor Correction (0.99 typical)
- Output Voltage up to 100V, Current up to 72A
- Constant Voltage (CV)/(CC) Constant Current auto-crossover
- Built-in RS-232/RS-485 Interface Standard
- Global Commands for Serial RS-232/RS-485 Interface
- Auto-Re-Start / Safe-Start: user selectable
- Last-Setting Memory
- High Resolution 16 bit ADCs & DACs
- · Low Ripple & Noise
- Front Panel Lock selectable from Front Panel or Software
- · Reliable Encoders for Voltage and Current adjustment
- · Parallel Operation with Active Current Sharing, for up to six identical units
- · Advanced Parallel Master / Slave. Total Current is programmed and measured via the Master
- External Analog Programming and Monitoring (user selectable 0-5V & 0-10V)
- · Reliable Modular and SMT Design
- 19" Rack Mount Capability for ATE and OEM applications
- · Optional Interfaces

Isolated Analog Programming and Monitoring Interface (0-5V/0-10V & 4-20mA) IEEE 488.2 SCPI (GPIB) Multi-Drop

LAN

LabView® and LabWindows® drivers

• Arbitrary functions for:

Automotive or laser simulation / 4 Pre-Programmed Functions

- · Fast Command Processing Time
- · Output Sequencing
- Four-cell Memory Settings
- User Programmable Signal Pins
- Five Year Warranty
- Worldwide Safety Agency Approvals; CE Mark for LVD and EMC regulations





2

Front Panel Description







- 1. AC ON/OFF Switch
- 2. Air Intake allows zero stacking for maximum system flexibility and power density.*
- 3. Reliable encoder controls Output Voltage and power supply setting.
- 4. Volt Display shows Output Voltage and directly displays and power supply settings.
- 5. Reliable encoder controls Output Current, and power supply setting.
- 6. Current Display shows Output Current and power supply setting.
- 7. Function/Status LEDs:
- AlarmFine ControlPreview SettingsFoldback ModeRemote ModeOutput On
- 8. Pushbuttons allow flexible user configuration
- Coarse and Fine adjustment of Output Voltage/Current and Advanced Parallel Master or Slave
- Preview settings and set Voltage/Current with Output OFF, Front Panel Lockout
- · Set OVP, UVP, UVL Limits
- Set Current Foldback
- Local/Remote Mode and select Address and Baud Rate
- Output ON/OFF and Auto-Start/Safe-Start Mode
- Menu
- 9. Optional front panel output jacks (binding post style, Ø 4mm) for modules up to 60V: 24A Max 10. Optional front panel insulated output sockets (Ø 4mm) for modules up to 60V: 24A Max

^{*} Zero stacking - side-by-side mounting of 6 units in a 19" Rack

Rear Panel Description





- 1. Connector allows (Non-isolated) Analog Program and Monitor and other functions.
- 2. Remote/Local Output Voltage Sense Connections.
- 3. Signal Connector
- 4. RS-232/RS-485 INPUT Remote Serial Programming.
- 5. RS-485 OUTPUT to other Z⁺ Power Supplies.
- 6. USB Interface
- 7. Wide-Range Input 85-265VAC continuous, 47/63Hz with Active Power Factor Correction (0.99 typical) AC Input Connector: IEC320 -C16.
- 8. Exhaust air exits at the back. Allows vertical stacking of units without any separation between units
- 9. Output Connections: Rugged Busbars for 6V up to 100V.
- 10. Optional Interface Position for LAN Interface.
- 11. Optional Interface Position for GPIB Interface (shown) or Isolated Analog Interface.

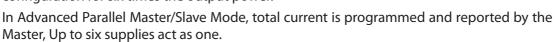


***** Power Benchtop Parallel and Series Configurations

Benchtop Power Supply

Parallel operation - Master/Slave:

Active current sharing allows up to six identical units to be connected in an auto-parallel configuration for six times the output power.





Series operation

Up to two units may be connected in series to increase the output voltage or to provide bipolar output.

Remote Programming via Built-in USB, RS-232 & RS-485 Interface

Standard Serial Interface allows daisy chain control of up to 31 power supplies on the same bus with built-in RS-232 & RS-485 Interface.

Optional Interface: LAN & IEEE488.2 SCPI (GPIB)

Multi-Drop

Allows LAN/IEEE Master to control up to 31 slaves over RS-485 daisy-chain Only the Master needs be equipped with LAN/IEEE Interface













Applications

 Z^{+} series power supplies have been designed to meet the demands of a wide variety of applications.

Test and Measurement

Built-in Last-Setting memory based on Flash Memory no battery or capacitor backup. Simplifies test design and requirements.

Built-in RS-232/RS-485 gives maximum system flexibility along with 0-5V and 0-10V, selectable analog programming.

Wide range of available inputs allows testing of many different devices.

Semiconductor Burn-in

Safe-Start mode ENABLED - to re-start at Output OFF to protect load.

Wide range input (85-265Vac) with Active Power Factor correction rides through input transients easily.

Component Test

High power density, zero stacking and single wire parallel operation, give maximum system flexibility.

Laser Diode

OVP is directly set on Voltage Display, assuring accurate protection settings.

Fast Constant Current response, no over shoot. Current Limit Fold Back assures load is protected from current surges.

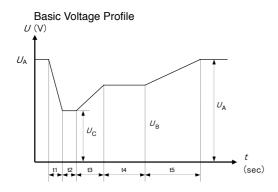
Heater Supplies

Smooth, reliable encoders enhance front panel control. Remote analog programming is user selectable 0-5V or 0-10V.

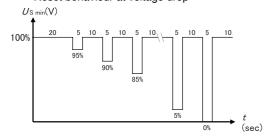
RF Amplifiers and Magnets

Robust design assures stable operation under a wide variety of loads. High linearity in Voltage & Current mode.

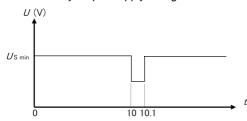
Z⁺ Series Sequence Programming Applications



Reset behaviour at voltage drop



Discontinuities in supply voltage Momentary drop in supply voltage



Options: (200W/400W/600W/800W)

Front Panel Output

Up to 60V Output Module

P/N: Z__--L

P/N: Z__--_L2





Optional front panel output jacks (binding post style, (Ø 4mm) for modules up to 60V: 24A Max

-L

Optional front panel insulated output sockets (Ø 4mm) for modules up to 60V: 24A Max

-L2

Z⁺ Assemblies

Dual Output Housing (for 105mm) 200W/400W/600W/800W Triple Output Housing (for 70mm) 200W/400W/600W/800W P/N: Z-NL200 (same p/n for both Dual & Triple Output Housing)





19" Rack Mounted to 4.8kW

Six units (70mm) can be assembled into 19-Inch rack/2U high Four units (105mm) can be assembled into 19-Inch rack/2U high to meet your configuration requirements.

In cases where the entire rack is not occupied with power units, P/N: Z-BP for 70mm, P/N: Z-WBP for 105mm blank panels can be installed:

P/N: Z-NL100





Power Modules Table

| Module Type | 200W | 400W | 600W | 800W |
|----------------|-----------|-----------|-----------|-----------|
| 0~10V | 20A | 40A | 60A | 72A |
| 0~20V | 10A | 20A | 30A | 40A |
| 0~36V | 6A | 12A | 18A | 24A |
| 0~60V | 3.5A | 7A | 10A | 14A |
| 0~100V | 2A | 4A | 6A | 8A |
| 19" rack width | 1/6 width | 1/6 width | 1/6 width | 1/6 width |
| 19" rack width | 1/4 width | 1/4 width | 1/4 width | 1/4 width |





Programming Options (Factory Installed)

Digital Programming via IEEE Interface

- IEEE 488.2 SCPI Compliant
- Program Voltage
- Measure Voltage
- Over Voltage setting and shutdown
- Error and Status Messages
- Multi-Drop
- Allows IEEE Master to control up to 31 slaves over RS-485 daisy-chain
- Only the Master needs be equipped with IEEE Interface

Isolated Analog Programming

Four Channels to Program and Monitor Voltage and Current.

Isolation allows operation with floating references in harsh electrical environments.

Choose between programming with Voltage or Current.

Connection via removable terminal block: Phoenix MC1,5/8-ST-3.81.

Voltage Programming, user-selectable 0-5V or 0-10V signal.
 Power Supply Voltage and Current Programming Accuracy ±1%
 Power Supply Voltage and Current Monitoring Accuracy ±1.5%

Current Programming with 4-20mA signal.
 Power Supply Voltage and Current Programming Accuracy ±1%

Power Supply Voltage and Current Monitoring Accuracy ±1.5%

LAN Interface P/N: LAN

VISA & SCPI Compatible

Address Viewable on Front Panel

Fixed and Dynamic Addressing

Compatible with most standard Networks

- TCP / UDP Socket Programming
- LAN Fault Indicators

Program Current

Measure Current

Current Foldback shutdown

Auto-detects LAN Cross-over Cable

P/N: IEEE

P/N: IS510

P/N: IS420

• Fast Startup

AC Cord

| Region | Europe | Japan | North America | Israel |
|--------------|-----------------|-----------------|-----------------|-----------------|
| Output Power | 850W | 850W | 850W | 850W |
| AC Cords | 10A/250Vac L=2m | 15A/125Vac L=2m | 13A/125Vac L=2m | 10A/250Vac L=2m |
| Wall Plug | INT'L 7/VII | JIS C8303 | NEMA 5-15P | SI-32 |
| Power Supply | IEC320-C15 | IEC320-C15 | IEC320-C15 | IEC320-C15 |
| Connector | | | | |
| Part Number | P/N: Z-E | P/N: Z-J | P/N : Z-U | P/N: Z-I |

Communication Cable

RS-232/RS-485 Cable is used to connect the power supply to the PC Controller

| | · · · · · · · · · · · · · · · · · · · | . , |
|------------------------|---------------------------------------|----------------------|
| Mode | RS-485 | RS-232 |
| PC Connector | DB-9F | DB-9F |
| Communication Cable | Shield Ground L=2m | Shield Ground L=2m |
| Power Supply Connector | EIA/TIA-568A (RJ-45) | EIA/TIA-568A (RJ-45) |
| P/N | Z/485-9 | Z/232-9 |

Serial Link Cable*

Daisy-chain up to 31 Z⁺ Series power supplies.

| Mode | Power Supply Connector | Communication Cable | P/N |
|--------|------------------------|---------------------|--------|
| RS-485 | EIA/TIA-568A (RJ-45) | Shield Ground | Z/RJ45 |

^{*} Included with power supply

Power Supply Identification / Accessories How to order

| Z | 10 - | 40- | - | - | |
|---|--|------------------|----------|--------|-------------------|
| Series | Output Voltage | Output Current | Factory | Output | AC cord Options: |
| Name | (0~10V) | (0~40A) | Options: | Jacks | Region : |
| | | | IEEE | | E - Europe |
| | | | LAN | L | J - Japan |
| | | | IS510 | L2 | U - North America |
| | | | IS420 | | I - Middle East |
| | | | | | C - China |
| Factory o | ption | | P/N | | |
| USB Interfa | ace built-in Standard | l | - | | |
| RS-232/RS- | -485 Interface built- | in Standard | - | | |
| GPIB Interface | | | IEEE | | |
| Voltage Pro | ogramming Isolated | Analog Interface | IS510 | | |
| Current Programming Isolated Analog Interface | | | IS420 | | |
| LAN Interfa | ace | | LAN | | |
| • | el output jacks (bind es up to 60V or 24A l | J , , | ım) | L | |
| Front pane | el insulated output s | ockets (Ø 4mm) | | | |
| for module | es up to 60V or 24A l | Max | | L2 | |

| Model | Output Voltage (VDC) | Output Current (A) | Output Power (W) |
|---------|----------------------------|--------------------------|------------------------|
| Z10-20 | | 0~20 | 200 |
| Z10-40 | 0~10 VDC | 0~40 | 400 |
| Z10-60 | 0~10 VDC | 0~60 | 600 |
| Z10-72 | | 0~72 | 720 |
| Z20-10 | | 0~10 | 200 |
| Z20-20 | 0~20 VDC | 0~20 | 400 |
| Z20-30 | 0~20 VDC | 0~30 | 600 |
| Z20-40 | | 0~40 | 800 |
| Z36-6 | | 0~6 | 216 |
| Z36-12 | 0~36 VDC | 0~12 | 432 |
| Z36-18 | | 0~18 | 648 |
| Z36-24 | | 0~24 | 864 |
| Z60-3.5 | | 0~3.5 | 210 |
| Z60-7 | 0.60VDC | 0~7 | 420 |
| Z60-10 | 0~60 VDC | 0~10 | 600 |
| Z60-14 | | 0~14 | 840 |
| Z100-2 | | 0~2 | 200 |
| Z100-4 | 0~100VDC | 0~4 | 400 |
| Z100-6 | U~100VDC | 0~6 | 600 |
| Z100-8 | | 0~8 | 800 |



2.1 Z⁺200 Series Specifications

| | DEL | Z | 10-20 | 20-10 | 36-6 | 60-3.5 | 100-2 |
|---|--|--------|---|--|--|--|---|
| | out voltage(*1) | V | 10 | 20 | 36 | 60 | 100 |
| | out current (*2) | Α | 20 | 10 | 6 | 3.5 | 2 |
| 3. Rated ou | ıtput power | W | 200 | 200 | 216 | 210 | 200 |
| CONSTANT V | OLTAGE MODE | Z | 10-20 | 20-10 | 36-6 | 60-3.5 | 100-2 |
| | regulation (*6) | | 10-20 | l | of rated output voltage | | 100-2 |
| | regulation (*7) | | | | of rated output voltage | | |
| | e (p-p, 20MHz) (*8) | mV | 50 | 50 | 50 | 50 | 80 |
| | .s. 5Hz~1MHz | mV | 5 | 6 | 6 | 7 | 8 |
| | ure coefficient | PPM/°C | | PPM/°C from rated ou | | | |
| | ture stability | | | out over 8hrs. interval | | | |
| | n-up drift | | | 0.05% of rated outpu | | | |
| | compensation/wire | V | | | | | |
| | | | 1 | 30 | 2 | 3 | 5 |
| | e time, 0~Vomax.(*9) | mS | 15 | | 30 | 50 | 50 |
| 10. Down-prog. respo | | | 12 | 25 | 30 | 40 | 50 |
| | Time delay (*17) | mS | 210 | 250 | 320 | 380 | 1200 |
| | No load (*10) (*15)(*17) | | 40 | 65 | 85 | 100 | 250 |
| | No load (*10) (*16)(*17) | | 200 | 200 | 290 | 310 | 1100 |
| 11 Transient | response time | mS | | ige to recover within 0 | | | |
| TT. Hansiene | response time | 1113 | | et-point: 10~100%, Lo | | | nd including 100\ |
| 12. Hold-u | p time (*19) | | 15mSec Typical. | | 16mSe | Typical. | |
| CONCTANT | IDDENT MODE | 7 | 10.20 | 20.10 | 26.6 | (0.35 | 100.3 |
| | URRENT MODE | Z | 10-20 | 20-10 | 36-6 | 60-3.5 | 100-2 |
| | regulation (*6) | | | | of rated output curre | | |
| | egulation (*11) | | | | of rated output curre | | |
| | ion thermal drift | | | n 0.05% of rated outp | | inutes following load | |
| | 5Hz~1MHz (*12) | mA | 25 | 15 | 8 | 4 | 3 |
| | ure coefficient | PPM/°C | | OPPM/°C from rated o | | | |
| | ture stability | | | over 8hrs. interval foll | | | |
| 7. Warm | n-up drift | | Less tha | an +/-0.1% of rated or | tput current over 30 | minutes following po | ower on. |
| DD OTE CTIVE | FUNCTIONS | | 10.00 | 20.40 | 24.4 | 60.05 | 100.0 |
| PROTECTIVE | FUNCTIONS | Z | 10-20 | 20-10 | 36-6 | 60-3.5 | 100-2 |
| 1. Foldback | k protection | | | -down when power sup | | | |
| | | | | cle in autostart mode or | | | |
| 2 Over-voltage | protection (OVP) | | Inverter Shut dow | n method. Reset by A | | | JTPUT button or b |
| | | | | | NABLE, or by commu | | 1 |
| 3. Over -volt | age trip point | V | 0.5~12 | 1~24 | 2~40 | 5~66 | 5~110 |
| 4. Output under v | voltage limit (UVL) | | Preset by front panel or o | communication port. Preve | ents from adjusting Vout b | elow limit. Does not affec | t in analog programm |
| 5 Output under volt | tage protection (UVP) | | Output shut-dov | vn when power supply | output voltage goes be | elow UVP programming | . User presetable. |
| 5. Output under von | lage protection (OVP) | | Reset by AC input recy | cle in autostart mode or | by OUTPUT button or b | y rear panel ENABLE, or b | y communication p |
| 6. Over temper | ature protection | | | User sele | ctable, latched or no | n latched. | |
| | | | | | | | |
| NALOG PROGRAMMING A | | | | | | | |
| | e programming | | | ~5V or 0~10V, user se | | | |
| | ogramming (*13) | | | 0~5V or 0~10V, user s | | | |
| | r programming | | | 10Kohm full scale, us | | | |
| | ogramming (*13) | | | 10Kohm full scale, use | | | |
| | (SO) control | | By e | lectrical Voltage: 0~0 | .6V/4~15V or dry cor | tact, user selectable l | ogic. |
| 6. Output curre | nt monitor (*13) | | | 0~5V or 0~10 | V, user selectable. Ac | curacy: +/-1%. | |
| | ltage monitor | | | 0~5V or 0~10 | V, user selectable. Ac | curacy: +/-1%. | |
| 8. Power sup | pply OK signal | | | 4~5V-OK, 0 | V-Fail. 500ohm serie | s resistance. | |
| 9. Parallel or | peration (*20) | | Possible, up | to 6 units in master/s | ave mode with singl | e wire current balance | |
| 10. Series | operation | | | 2:1 | | | e connection. |
| | | | | 2 Identic | al units (with externa | | e connection. |
| | Cindicator | | Open collector. C | C mode: On, CV mode | | Il diodes). | |
| | C indicator C (ILC) control | | | | e: Off. Maximum volt | ll diodes). age: 30V, maximum s | ink current: 10m/ |
| 12. Interlock | | | Enables/Disables the PS or | C mode: On, CV mode utput by dry contact (Short: | e: Off. Maximum volt On, Open: Off, Source curre | ll diodes). age: 30V, maximum s nt: less than 0.5mA). Ena/Dis | ink current: 10m/ is activated by front pa |
| 12. Interlock 13. Local/Remo | (ILC) control | | Enables/Disables the PS or By electr | C mode: On, CV mode utput by dry contact (Short: rical signal or Open/Sl | e: Off. Maximum volt On, Open: Off, Source curre nort: 0~0.6V or short: | Il diodes). age: 30V, maximum s nt: less than 0.5mA). Ena/Dis Remote, 2~15V or op | ink current: 10mA is activated by front pa en: Local |
| 12. Interlock 13. Local/Remo 14. Local/Remot | t (ILC) control te mode Control e mode Indicator | | Enables/Disables the PS or By electr Open collector (shur | C mode: On, CV mode utput by dry contact (Short: rical signal or Open/Sl nted by 36V zener). Or | e: Off. Maximum volt On, Open: Off, Source curre nort: 0~0.6V or short: 1 (0~0.6V, 10mA sink o | Il diodes). age: 30V, maximum s nt: less than 0.5mA). Ena/Dis Remote, 2~15V or op :urrent max.)-Remote. | ink current: 10mA is activated by front poen: Local Off-Local (30V ma |
| 12. Interlock 13. Local/Remo 14. Local/Remot | (ILC) control te mode Control | | Enables/Disables the PS or By electr Open collector (shur | C mode: On, CV mode utput by dry contact (Short: rical signal or Open/Sl nted by 36V zener). Or I output =0.8V, Minim | e: Off. Maximum volt On, Open: Off, Source curre nort: 0~0.6V or short: 1 (0~0.6V, 10mA sink o num high level outpu | al diodes). age: 30V, maximum s nt: less than 0.5mA). Ena/Dis Remote, 2~15V or op current max.)-Remote. t =3.8V, Maximum hig | ink current: 10mA is activated by front poen: Local Off-Local (30V ma |
| 12. Interlock 13. Local/Remo 14. Local/Remot | t (ILC) control te mode Control e mode Indicator | | Enables/Disables the PS or By electr Open collector (shur Maximum low leve | C mode: On, CV mode utput by dry contact (Short: rical signal or Open/Sl nted by 36V zener). Or I output =0.8V, Minim Maximum sourc | e: Off. Maximum volt On, Open: Off, Source curre nort: 0~0.6V or short: 1 (0~0.6V, 10mA sink on the current =16mA, pu | Il diodes). age: 30V, maximum s nt: less than 0.5mA). Ena/Dis Remote, 2~15V or op current max.)-Remote. t =3.8V, Maximum hig lse =20µs Typical. | ink current: 10mA is activated by front pa pen: Local Off-Local (30V ma gh level output =5 |
| 12. Interlock 13. Local/Remo 14. Local/Remot 15.Trig | t (ILC) control te mode Control e mode Indicator | | Enables/Disables the PS or By electr Open collector (shur Maximum low leve Maximum low le | C mode: On, CV mode utput by dry contact (Short: rical signal or Open/Sl nted by 36V zener). Or I output =0.8V, Minim Maximum sourc vel input =1.2V, Minir | e: Off. Maximum volt On, Open: Off, Source curre nort: 0~0.6V or short: 1 (0~0.6V, 10mA sink of tum high level outpu e current =16mA, pu num high level input | al diodes). age: 30V, maximum s nt: less than 0.5mA). Ena/Dis Remote, 2~15V or or current max.)-Remote. t =3.8V, Maximum hig se =20µs Typical. =3.5V, Maximum hig | ink current: 10mA is activated by front propers: Local Off-Local (30V magh level output = 5 h level input = 5V, |
| 12. Interlock 13. Local/Remo 14. Local/Remot 15.Trig | k (ILC) control te mode Control e mode Indicator Iger out | | Enables/Disables the PS or By electr Open collector (shur Maximum low leve Maximum low le Maximum sink o | C mode: On, CV mode utput by dry contact (Short: rical signal or Open/SI nted by 36V zener). Or I output =0.8V, Minim Maximum sourc vel input =1.2V, Minir current =16mA, positi | e: Off. Maximum volt On, Open: Off, Source curre nort: 0-0.6V, or short: I (0~0.6V, 10mA sink o num high level outpu e current =16mA, pu num high level input ve edge, trigger: tw = | al diodes). age: 30V, maximum s nt: less than 0.5mA). Ena/Dis Remote, 2~15V or op current max.)-Remote. t = 3.8V, Maximum hig se = 20µs Typical. = 3.5V, Maximum hig = 10µs minimum, Tr/Tf | ink current: 10m/ is activated by front poen: Local Off-Local (30V magh level output =! h level input =5V, =1µs maximum. |
| 12. Interlock 13. Local/Remo 14. Local/Remot 15.Trig 16.Trig | k (ILC) control te mode Control e mode Indicator gger out gger in uned signal 1 | | Enables/Disables the PS or By electr Open collector (shur Maximum low leve Maximum low le Maximum sink or Open collector | C mode: On, CV mode utput by dry contact (Short: rical signal or Open/SI ted by 36V zener). Or all output = 0.8V, Minim Maximum source vel input = 1.2V, Minim turrent = 16mA, position, maximum voltage 2 | e: Off. Maximum volt On, Open: Off, Source curre nort: 0~0.6V or short: 1 (0~0.6V, 10mA sink o num high level outpu e current =16mA, pu num high level input ve edge, trigger: tv = 5V,maximum sink cu | al diodes). age: 30V, maximum s nt: less than 0.5mA). Ena/Dis Remote, 2~15V or op current max.)-Remote. t = 3.8V, Maximum hig ise = 20µs Typical. = 3.5V, Maximum hig = 10µs minimum, Tr/Tf rrent 100mA. (Shunter | ink current: 10m/ is activated by front pi pen: Local Off-Local (30V may gh level output =: h level input =:5V, =1µs maximum. d by 27V zener) |
| 12. Interlock 13. Local/Remo 14. Local/Remot 15.Trig 16.Trig | k (ILC) control te mode Control e mode Indicator Iger out | | Enables/Disables the PS or By electr Open collector (shur Maximum low leve Maximum low le Maximum sink or Open collector | C mode: On, CV mode utput by dry contact (Short: rical signal or Open/Slotted by 36V zener). Or I output = 0.8V, Minim Maximum source vel input = 1.2V, Minim current = 16mA, positi | e: Off. Maximum volt On, Open: Off, Source curre nort: 0~0.6V or short: 1 (0~0.6V, 10mA sink o num high level outpu e current =16mA, pu num high level input ve edge, trigger: tv = 5V,maximum sink cu | al diodes). age: 30V, maximum s nt: less than 0.5mA). Ena/Dis Remote, 2~15V or op current max.)-Remote. t = 3.8V, Maximum hig ise = 20µs Typical. = 3.5V, Maximum hig = 10µs minimum, Tr/Tf rrent 100mA. (Shunter | ink current: 10mA is activated by front pa isen: Local Off-Local (30V ma gh level output = 5V, =1µs maximum. d by 27V zener) |
| 12. Interlock 13. Local/Remo 14. Local/Remo 15.Trig 16.Tri 17. Program 18. Program | k (ILC) control te mode Control e mode Indicator gger out gger in uned signal 1 | | Enables/Disables the PS or By electr Open collector (shur Maximum low leve Maximum low le Maximum sink or Open collector | C mode: On, CV mode utput by dry contact (Short: rical signal or Open/SI ted by 36V zener). Or all output = 0.8V, Minim Maximum source vel input = 1.2V, Minim turrent = 16mA, position, maximum voltage 2 | e: Off. Maximum volt On, Open: Off, Source curre nort: 0~0.6V or short: 1 (0~0.6V, 10mA sink o num high level outpu e current =16mA, pu num high level input ve edge, trigger: tv = 5V,maximum sink cu | al diodes). age: 30V, maximum s nt: less than 0.5mA). Ena/Dis Remote, 2~15V or op current max.)-Remote. t = 3.8V, Maximum hig ise = 20µs Typical. = 3.5V, Maximum hig = 10µs minimum, Tr/Tf rrent 100mA. (Shunter | ink current: 10m/ is activated by front pi pen: Local Off-Local (30V may gh level output =: h level input =:5V, =1µs maximum. d by 27V zener) |
| 12. Interlock 13. Local/Remo 14. Local/Remo 15.Trig 16.Tri 17. Program 18. Program | k (ILC) control te mode Control e mode Indicator gger out gger in uned signal 1 | | Enables/Disables the PS or By electr Open collector (shur Maximum low leve Maximum low le Maximum sink or Open collector | C mode: On, CV modutput by dry contact (Short: ical signal or Open/Slnted by 36V zener). Or I output =0.8V, Minim Maximum sourcivel input =1.2V, Minimum reurrent =16mA, positi , maximum voltage 2 ; maximum voltage 2 | e: Off. Maximum volt On, Open: Off, Source curre nort: O-0.6V or short: I (O-0.6V, 10mA sink on num high level output e current =16mA, put num high level input ve edge, trigger: tw = 5V,maximum sink cu 5V,maximum sink cu | al diodes). age: 30V, maximum s nt: less than 0.5mA). Ena/Dis Remote, 2~15V or op current max.)-Remote. t =3.8V, Maximum hig se =20µs Typical. =3.5V, Maximum hig =10µs minimum, Tr/Tf rrent 100mA. (Shunter | ink current: 10mA is activated by front pa isen: Local Off-Local (30V ma gh level output = 5V, =1µs maximum. d by 27V zener) |
| 12. Interlock 13. Local/Remo 14. Local/Remo 15.Trig 16.Tri 17. Program 18. Program | k (ILC) control te mode Control e mode Indicator gger out gger in uned signal 1 | | Enables/Disables the PS or By electr Open collector (shur Maximum low leve Maximum low le Maximum sink or Open collector | C mode: On, CV modutput by dry contact (Short: rical signal or Open/Slnted by 36V zener). Or I output =0.8V, Minim Maximum sourcevel input =1.2V, Minim current =16mA, positi, maximum voltage 2, maximum voltage 2 | e: Off. Maximum volt On, Open: Off, Source curre nort: 0-0.6V, 10mA sink of 10~0.6V, 10mA sink of num high level output e current =16mA, put num high level input ve edge, trigger: tw= 5V,maximum sink cu 5V,maximum sink cu ble options with 2 En | al diodes). age: 30V, maximum s nt: less than 0.5mA). Ena/Dis Remote, 2~15V or op current max.)-Remote. t =3.8V, Maximum hig se =20µs Typical. =3.5V, Maximum hig e10µs minimum, Tr/Tf rrent 100mA. (Shunter | ink current: 10mA is activated by front pa isen: Local Off-Local (30V ma gh level output = 5V, =1µs maximum. d by 27V zener) |
| 12. Interlock 13. Local/Remo 14. Local/Remo 15.Trig 16.Tri 17. Program 18. Program | k (ILC) control te mode Control e mode Indicator gger out gger in uned signal 1 | | Enables/Disables the PS or By electr Open collector (shur Maximum low leve Maximum low le Maximum sink or Open collector | C mode: On, CV modutput by dry contact (Short: rical signal or Open/Sl tted by 36V zener). Or I output = 0.8V, Minim Maximum source vel input = 1.2V, Minim turrent = 16mA, position, maximum voltage 2, maximum voltage 2 Multip V | e: Off. Maximum volt On, Open: Off, Source curre nort: 0~0.6V, 10mA sink of 1 (0~0.6V, 10mA sink of the current =16mA, pu num high level input ve edge, trigger: tw = 5V,maximum sink cu 5V,maximum sink cu ole options with 2 En out/lout manual adju | al diodes). age: 30V, maximum s nt: less than 0.5mA). Ena/Dis Remote, 2~15V or op current max.)-Remote. t = 3.8V, Maximum hig ise = 20µs Typical. = 3.5V, Maximum hig = 10µs minimum, Tr/Tf rrent 100mA. (Shunter rrent 100mA. (Shunter coders | ink current: 10m/ is activated by front pi pen: Local Off-Local (30V may gh level output =: h level input =:5V, =1µs maximum. d by 27V zener) |
| 12. Interlock 13. Local/Remo 14. Local/Remot 15.Trig 16.Tric 17. Program 18. Program | k (ILC) control te mode Control e mode Indicator ager out gger in amed signal 1 amed signal 2 | | Enables/Disables the PS or By electr Open collector (shur Maximum low leve Maximum low le Maximum sink or Open collector | C mode: On, CV mode utput by dry contact (Short: rical signal or Open/Sl nted by 36V zener). Or l output = 0.8V, Minim Maximum source vel input = 1.2V, Minim turrent = 16mA, position, maximum voltage 2 maximum voltage 2 Multip V OVF | e: Off. Maximum volt On, Open: Off, Source curre nort: 0~0.6V or short: (0~0.6V, 10mA sink of hum high level outpue e current =16mA, pu num high level input ve edge, trigger: tw = 5V,maximum sink cu 5V,maximum sink cu ble options with 2 En out/lout manual adjue by UVL/UVP manual adjue | al diodes). age: 30V, maximum s age: 30V, maximum s nt: less than 0.5mA). Ena/Dis Remote, 2~15V or or current max.)-Remote. t =3.8V, Maximum hig les =20µs Typical. =3.5V, Maximum hig e10µs minimum, Tr/Tf rrent 100mA. (Shunter rrent 100mA. (Shunter coders list djust | ink current: 10m/ is activated by front pi pen: Local Off-Local (30V may gh level output =: h level input =:5V, =1µs maximum. d by 27V zener) |
| 12. Interlock 13. Local/Remo 14. Local/Remot 15.Trig 16.Tric 17. Program 18. Program | k (ILC) control te mode Control e mode Indicator gger out gger in uned signal 1 | | Enables/Disables the PS or By electr Open collector (shur Maximum low leve Maximum low le Maximum sink or Open collector Open collector | C mode: On, CV mode uput by dry contact (Short: ical signal or Open/Sl mted by 36V zener). Or Il output =0.8V, Minim Maximum source vel input =1.2V, Minimum =1.2V, Minimum =1.6MA, positi r, maximum voltage 2 r, maximum voltage 2 Multiput =1.2V, Minimum =1.2V, M | e: Off. Maximum volt On, Open: Off, Source curre nort: O~0.6V, 10 mA sink of I (0~0.6V, 10 mA sink of num high level output e current = 16 mA, put mum high level input we edge, trigger: tw = 5V,maximum sink cu 5V,maximum sink cu bele options with 2 En out/lout manual adjut/ VUVL/UVP manual ad ns - OVP, UVL, UVP, Fo | al diodes). age: 30V, maximum s age: 30V, maximum s att less than 0.5mA). Ena/Dis Remote, 2~15V or or current max.)-Remote. t =3.8V, Maximum hig les =20µs Typical. =3.5V, Maximum hig 10µs minimum, Tr/Tf rrent 100mA. (Shunte rrent 100mA. (Shunte coders list djust ldback, OCP, INT, SO | ink current: 10m/ is activated by front p een: Local Off-Local (30V m. gh level output =: h level input =5V, =1µs maximum. d by 27V zener) d by 27V zener) |
| 12. Interlock 13. Local/Remo 14. Local/Remot 15.Trig 16.Tric 17. Program 18. Program | k (ILC) control te mode Control e mode Indicator ager out gger in amed signal 1 amed signal 2 | | Enables/Disables the PS or By electr Open collector (shur Maximum low leve Maximum low le Maximum sink or Open collector Open collector | C mode: On, CV mode utput by dry contact (Short: ical signal or Open/Slited by 36V zener). Or l output = 0.8V, Minim Maximum source vel input = 1.2V, Minim utrrent = 16mA, positi , maximum voltage 2 , maximum voltage 2 , mode mode mode of the contact of the con | e: Off. Maximum volt On, Open: Off, Source curre nort: O-0.6V, 10 mA sink on the color of the color of the color the color of the color of the color the color of the color of the color of the color the color of the color | al diodes). age: 30V, maximum s age: 30V, maximum s nt: less than 0.5mA). Ena/Dis Remote, 2~15V or op current max.)-Remote. t =3.8V, Maximum hig se =20µs Typical. =3.5V, Maximum hig 10µs minimum, Tr/Tf rrent 100mA. (Shunte rrent 100mA. (Shunte step to 100mA. (Shunte diback, OCP, INT, SO N,IEEE,RS232,RS485,U | ink current: 10m/ is activated by front p een: Local Off-Local (30V m. gh level output =: h level input =5V, =1µs maximum. d by 27V zener) d by 27V zener) |
| 12. Interlock 13. Local/Remo 14. Local/Remot 15.Trig 16.Tric 17. Program 18. Program | k (ILC) control te mode Control e mode Indicator ager out gger in amed signal 1 amed signal 2 | | Enables/Disables the PS or By electr Open collector (shur Maximum low leve Maximum sink c Open collector Open collector | C mode: On, CV mode utput by dry contact (Short: ical signal or Open/Sl nted by 36V zener). Or I output =0.8V, Minim Maximum source vel input =1.2V, Minim utrrent =16mA, positi , maximum voltage 2 , maximum voltage 2 , Multip V OVF Protection Function ommunication Function Communication Function of the contact of the co | e: Off. Maximum volt On, Open: Off, Source curre nort: O-0.6V or short: I (O-0.6V, 10mA sink on the short of the short of the short the current = 16mA, pu the current = 16mA, pu the edge, trigger: tw = 5V, maximum sink cu SV, maxim | al diodes). age: 30V, maximum s nt: less than 0.5mA). Ena/Dis Remote, 2~15V or op current max.)-Remote. t =3.8V, Maximum hig se =20µs Typical. =3.5V, Maximum hig 10µs minimum, Tr/Tf rrent 100mA. (Shunte rrent 100mA. (Shunte coders list diback, OCP, INT, SO V,IEEE,RS232,RS485,U EBAUG RATE, Address | ink current: 10m/ is activated by front poen: Local Off-Local (30V m. gh level output =: h level input =:5V, =1µs maximum. d by 27V zener) d by 27V zener) |
| 12. Interlock 13. Local/Remo 14. Local/Remot 15.Trig 16.Tric 17. Program 18. Program | k (ILC) control te mode Control e mode Indicator ager out gger in amed signal 1 amed signal 2 | | Enables/Disables the PS or By electr Open collector (shur Maximum low leve Maximum low leve Maximum sink c Open collector Open collector Collector Analog Control Fu | C mode: On, CV mode utput by dry contact (Short: rical signal or Open/Slotted by 36V zener). Or I output = 0.8V, Minim Maximum source vel input = 1.2V, Minim current = 16mA, positi , maximum voltage 2 , maximum voltage 2 , Multip V OVF Protection Function ommunication Function Communication Function currents - Selection Velantical Selection Ve | e: Off. Maximum volt On, Open: Off, Source curre nort: O0.6V, or short: I (O0.6V, 10mA sink of the current = 16mA, punch the current = 16mA, punch the current = 16mA, punch the edge, trigger: tw = 5V, maximum sink cunch SV, maximum sink cunch SV, maximum sink cunch Dele options with 2 Encut/lout manual adju- V/UVL/UVP manual and service of the cons - Selection of LAI nctions - Selection of LAI nctions - Selection of blage/resistive progionarts. | al diodes). age: 30V, maximum s age: 30V, maximum s nt: less than 0.5mA). Ena/Dis Remote, 2~15V or op current max.)-Remote. t =3.8V, Maximum hig se =20µs Typical. =3.5V, Maximum hig e10µs minimum, Tr/Tf rrent 100mA. (Shunter rrent 100mA. (Shunter coders ist djust ldback, OCP, INT, SO N,IEEE,RS232,RS485,U eBaud Rate, Address ramming, 5V/10V, 5K/ | ink current: 10m/ is activated by front poen: Local Off-Local (30V may) gh level output =! h level input =5V, =1µs maximum. d by 27V zener) d by 27V zener) |
| 12. Interlock 13. Local/Remo 14. Local/Remot 15.Trig 16.Tric 17. Program 18. Program | k (ILC) control te mode Control e mode Indicator ager out gger in amed signal 1 amed signal 2 | | Enables/Disables the PS or By electr Open collector (shur Maximum low leve Maximum low le Maximum sink of Open collector Open collector Open collector Analog Control Fu | C mode: On, CV modutput by dry contact (Short: rical signal or Open/Slnted by 36V zener). Or I output =0.8V, Minim Maximum source vel input =1.2V, Minim current =16mA, position, maximum voltage 2 maximum voltage 2 maximum voltage 2 Multip V OVF Protection Function Communication Function Communication Function Sunctions - Selection V Vitions - Selection of Voltes (Short Signal S | e: Off. Maximum volt On, Open: Off, Source curre nort: 0~0.6V, 10mA sink of 10~0.6V, 10mA sink of 10V, 10V, 10V, 10V, 10V, 10V, 10V, 10V, | Il diodes). age: 30V, maximum s age: 30V, maximum s nt: less than 0.5mA). Ena/Dis Remote, 2~15V or op :urrent max.)-Remote. t = 3.8V, Maximum hig les = 20µs Typical. = 3.5V, Maximum hig = 10µs minimum, Tr/Tf rrent 100mA. (Shunter rrent 100mA. (Shunter rrent 100mA. (Shunter light sist digust digust digust digust Rese, OCP, INT, SO V, IEEE, RS232, RS485, U E Baud Rate, Address Famming, 5V/10V, 5K/ ng 5V/10V, Output ON/ | ink current: 10mA is activated by front pro- ben: Local Off-Local (30V ma gh level output =: th level input =5V, =1µs maximum. d by 27V zener) d by 27V zener) SB 10K programmin- OFF, Front Panel Lo |
| 12. Interlock 13. Local/Remo 14. Local/Remot 15.Trig 16.Tri 17. Program 18. Program RONT PANEL | te (ILC) control te mode Control e mode Indicator Iger out Iger in Imed signal 1 Imed signal 2 | | Enables/Disables the PS of By electr Open collector (shur Maximum low leve Maximum low le Maximum sink of Open collector Open collector Open collector Analog Control Function | C mode: On, CV mode uput by dry contact (Short: ical signal or Open/Sl mted by 36V zener). Or Il output =0.8V, Minim Maximum source vel input =1.2V, Minimum | e: Off. Maximum volt On, Open: Off, Source curre nort: O~O.6V or short: i (0~O.6V, 10mA sink on num high level output e current = 16mA, put mum high level input ve edge, trigger: tw = 5V,maximum sink cut SV,maximum sink cut ble options with 2 Entout/lout manual adjut/ ins - OVP, UVL, UVP, Foons - Selection of LAI nctions - Selection of LAI nctions - Selection of oltage/resistive prograge/Current Monitorii cy: 0.5% of rated outputs. | al diodes). age: 30V, maximum s age: 30V, maximum s nt: less than 0.5mA). Ena/Dis Remote, 2~15V or or current max.)-Remote. t =3.8V, Maximum hig les =20µs Typical. =3.5V, Maximum hig 10µs minimum, Tr/Tf rent 100mA. (Shunter rent 100mA. (Shunter coders list djust ldback, OCP, INT, SO N,IEEE,RS232,RS485,U EBaud Rate, Address ramming, 5V/10V, 5K/ rg 5V/10V, Output ON/ out voltage+/-1 count | ink current: 10mA is activated by front pro- ent Local Off-Local (30V ma gh level output = 5V, = 1 µs maximum. d by 27V zener) d by 27V zener) SB 10K programmin. OFF, Front Panel Local |
| 12. Interlock 13. Local/Remo 14. Local/Remot 15.Trig 16.Tri 17. Program 18. Program RONT PANEL | k (ILC) control te mode Control e mode Indicator ager out gger in amed signal 1 amed signal 2 | | Enables/Disables the PS of By electr Open collector (shur Maximum low leve Maximum low le Maximum sink of Open collector Open collector Open collector Analog Control Function | C mode: On, CV mode uput by dry contact (Short: ical signal or Open/Sl meted by 36V zener). Or I output =0.8V, Minim Maximum source vel input =1.2V, Minimum resurrent =16mA, positi , maximum voltage 2 r, maximum voltage 3 r, maximum voltage 2 r, maximum voltage 3 r, maximum voltage 4 r, maximum voltage 5 r, maximum voltage 6 r, maximum voltage 7 r, maximum voltage 8 r, maximum voltage 9 r, maximum voltage | e: Off. Maximum volt On, Open: Off, Source curre nort: O~0.6V, 10 mA sink on (10~0.6V, 10 mA sink on the output of the output of the output e current = 16 mA, put unum high level input we edge, trigger: tw = 5V,maximum sink cut 5V,maximum sink cut out/lout manual adjut/ VUVL/UVP manual ad out/ output/ output/ ons - OVP, UVL, UVP, Forus - Selection of LAI nctions - Selection of LAI nctions - Selection of LAI output/ outp | al diodes). age: 30V, maximum s age: 30V, maximum s ant: less than 0.5mA). Ena/Dis Remote, 2~15V or or current max.)-Remote. t =3.8V, Maximum hig se =20µs Typical. =3.5V, Maximum hig se 10µs minimum, Tr/Tf rrent 100mA. (Shunter rrent 100mA. (Shunter coders sist diback, OCP, INT, SO N,IEEE,RS232,RS485,U Baud Rate, Address ramming, 5V/10V, Output ON/ put voltage+/-1 count out current+/-1 count | ink current: 10mA is activated by front pro- ent Local Off-Local (30V ma gh level output = 5V, = 1 µs maximum. d by 27V zener) d by 27V zener) SB 10K programmin. OFF, Front Panel Local |
| 12. Interlock 13. Local/Remo 14. Local/Remot 15. Trig 16. Trig 17. Program 18. Program RONT PANEL 1. Contro | te (ILC) control te mode Control e mode Indicator ager out gger in amed signal 1 amed signal 2 | | Enables/Disables the PS of By electr Open collector (shur Maximum low leve Maximum low le Maximum sink of Open collector Open collector Open collector Analog Control Function | C mode: On, CV mode utput by dry contact (Short: ical signal or Open/Slited by 36V zener). Or I output = 0.8V, Minim Maximum source vel input = 1.2V, Minim utrent = 16mA, position, maximum voltage 2 to maximum voltage 2 to Multiput = 1.2V, Minimum voltage 2 to | e: Off. Maximum volt On, Open: Off, Source curre nort: O-0.6V or short: (O-0.6V, 10mA sink on the current =16mA, pu the current =16m | al diodes). age: 30V, maximum sont less than 0.5mA). Ena/Dis Remote, 2~15V or op: current max.)-Remote. t =3.8V, Maximum his les =20µs Typical. =3.5V, Maximum his les =10µs minimum, Tr/Tf rrent 100mA. (Shunter rrent 100mA. (Shunter light sont | ink current: 10mA is activated by front pro- ent Local Off-Local (30V ma gh level output = 5V, = 1 µs maximum. d by 27V zener) d by 27V zener) SB 10K programmin. OFF, Front Panel Local |
| 12. Interlock 13. Local/Remot 14. Local/Remot 15. Trig 16. Tric 17. Program 18. Program RONT PANEL 1. Contro 2. Di 3. Indi | te (ILC) control te mode Control e mode Indicator Iger out Iger in Imed signal 1 Imed signal 2 | | Enables/Disables the PS of By electr Open collector (shur Maximum low leve Maximum low le Maximum sink of Open collector Open collector Open collector Analog Control Function | C mode: On, CV mode utput by dry contact (Short: ical signal or Open/Sl nted by 36V zener). Or I output =0.8V, Minim Maximum source vel input =1.2V, Minim utrrent =16mA, positi , maximum voltage 2 , maximum | e: Off. Maximum volt On, Open: Off, Source curre nort: O~0.6V, 10 mA sink on (10~0.6V, 10 mA sink on the output of the output of the output e current = 16 mA, put unum high level input we edge, trigger: tw = 5V,maximum sink cut 5V,maximum sink cut out/lout manual adjut/ VUVL/UVP manual ad out/ output/ output/ ons - OVP, UVL, UVP, Forus - Selection of LAI nctions - Selection of LAI nctions - Selection of LAI output/ outp | al diodes). age: 30V, maximum sont: less than 0.5mA). Ena/Dis Remote, 2~15V or op: urrent max.)-Remote. t =3.8V, Maximum highes = 20µs Typical. =3.5V, Maximum highes = 20µs Typical. =3.5V, Maximum highes = 10µs minimum, Tr/Tfrent 100mA. (Shunter 100mA. (| ink current: 10mA is activated by front pro- ene: Local Off-Local (30V ma gh level output =5 h level input =5V, =1µs maximum. d by 27V zener) d by 27V zener) SB 10K programming OFF, Front Panel Local |

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PROGRAMMING AND READBACK (RS232/485,USB, Optional: IEEE, LAN)

| 0.05% of rated output voltage |
|--|
| 0.1% of actual +0.1% of rated output current |
| 0.012% of full scale |
| 0.012% of full scale |
| 0.05% of rated output voltage |
| 0.1% of actual +0.3% of rated output current |
| 0.012% of full scale |
| 0.012% of full scale |
| |

| INPUT CHARACTERISTICS | Z | 10-20 | 20-10 | 36-6 | 60-3.5 | 100-2 |
|--|---|---|-------------|-----------------------|-------------|-----------|
| 1. Input voltage/freq. (*3) | | 85~265Vac continuous, 47~63Hz, single phase | | | | |
| 2. Maximum Input current 100/200VAC (*4) (*18) | | 2.65/1.31 | 2.62/1.29 | 2.76/1.37 | 2.69/1.33 | 2.55/1.26 |
| 3. Power Factor (Typ) | | | >0.99 at 10 | 00Vac, >0.98 at 200Va | c,100% load | |
| 4. Efficiency (Typ) 100/200VAC (*4) (*18) | % | 76/77.5 | 77/79 | 79/80.5 | 79/80.5 | 79/81 |
| 5. Inrush current 100/200VAC (*5) | | | | Less than 15A/30A | | |

ENVIRONMENTAL CONDITIONS

| Operating temperature | | 0~50°C, 100% load. |
|------------------------|---|--|
| 2. Storage temperature | | -20~85°C |
| 3. Operating humidity | % | 20~90% RH (no condensation). |
| 4. Storage humidity | % | 10~95% RH (no condensation). |
| 5. Altitude | | Maximum 3000m. Derate ambient temp above 2000m. |
| | | Operating: Maximum ambient temperature, From 2000m up to 3000m Ambient temperature 40°C. |

SAFFTY/FMC

| SAFETY/EMC | | |
|--------------------------|--------|---|
| 1. Applicable standards: | Safety | UL61010-1, EN61010-1, IEC61010-1. Design to meet UL60950-1, EN60950-1 10V≤Vout≤60V: Output,J1,J2,J3,J4,USB,LAN,IEEE/ISOLATED Analog are Non Hazardous Vout=100V:Output,J1,J2 are Hazardous J3,J4,USB, IEEE/ISOLATED Analog ,LAN are Non Hazardous |
| | EMC | IEC/EN61326-1 (Built to meet EN55022/EN55024) |
| 2. Withstand voltage | | 10≤Vout≤36V models: Input-Output&J1,J2,J3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 4242VDC/1min; Input-Ground: 2828VDC/1min. Output&J1,J2,J3,J4,USB,LAN/IEEE/ISOLATED ANALOG-Ground: 707VDC/1min. 60V,100V models: Input-Output&J1,J2: 4242VDC/1min; Input-J3,J4,USB,LAN/IEEE/ISOLATED Analog: 4242VDC/1min; Input-Ground: 2828VDC/1min. Output&J1,J2- J3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 1910VDC/1min; Output&J1,J2-Ground: 1380VDC/1min. J3, J4, USB/LAN/IEEE/ISOLATED ANALOG - Ground: 707VDC/1min; |
| 3. Insulation resistance | | More than 100Mohm at 25°C, 70%RH. |
| 4. Conducted emission | | IEC/EN61326-1 Industrial Location - B, FCC part 15-B, VCCI-B |
| 5. Radiated emission | | IEC/EN61326-1 Industrial Location - A, FCC part 15-A, VCCI-A |

MECHANICAI

| MECHANICAL | | | |
|-------------------------------|-----------|----|---|
| 1. Cooling | | | Forced air cooling by internal fan. |
| STANDARD STANDARD | | Kg | Less than 1.9Kg. |
| 2. Weight | WIDE BODY | Kg | Less than 2.4Kg. Wide body with Isolated analog or Binding post or IEEE. |
| 3 Bissessi (M. H. B) STANDARD | | mm | H: 83, W: 70, D: 350 (excluding bus bars, handles). (Refer to Outline drawing). |
| 3. Dimensions (WxHxD) | WIDE BODY | mm | H: 83, W: 105, D: 350 (excluding bus bars, handles…). (Refer to Outline drawing). |
| 4. Vibration | | | According to: IEC60068-2-64 |
| 5. SI | 5. Shock | | Less than 20G, half sine, 11mS. Unit is unpacked. According to: IEC60068-2-27 |

NOTES:

- *1: Minimum voltage is guaranteed to maximum 0.1% of rated output voltage.
- *2: Minimum current is guaranteed to maximum 0.2% of rated output current.
- *3: For cases where conformance to various safety standards (UL, IEC, etc...) is required, to be described as 100-240Vac (50/60Hz).
- *4: Ta=25°C with rated output power.
- *5: Not including EMI filter inrush current, less than 0.2mSec at cold start Ta=25°C
- *6: At 85~132Vac or 170~265VAC, constant load.
- *7: From No-Load to Full-Load, constant input voltage. Measured at the sensing point in Remote Sense.
- *8: Measured with JEITA RC-9131A (1:1) probe.
- *9: From 10% to 90% or 90% to 10% of Rated Output Voltage, with rated resistive load.
- *10: From 90% to 10% of Rated Output Voltage.
 *11: For load voltage change, equal to the unit voltage rating, constant input voltage.
- *12: For 10V model the ripple is measured at 2V to rated output voltage and rated output current. For other models, the ripple is measured at 10~100%
 - of rated output voltage and rated output current.
- *13: The Constant Current programming, readback and monitoring accuracy do not include the warm-up and Load regulation thermal drift.
- *14: Measured with JEITA RC-9131A (1:1) probe.
- *15: For cases where the time interval between each down programming is longer than Td (time delay).
- *16: For cases where the time interval between each down programming is shorter than Td (time delay).
- *17: Td typical Minimum time between consecutive down programming cycles.
- *18: PS with Lan, IEEE, models decrease efficiency by 0.5% and increase input current by 0.5%. PS with Isolated analog option decreases efficiency by 1.5% and increases input current by 1.5%.
- *19: At rated output power.
- *20: For Parallel operation more than 2 units 5% of total output current is requierd.



2.2 Z⁺400 Series Specifications

| MODEL | 7 | 10.40 | 20.20 | 26.12 | 60.7 | 100.4 |
|--|--------|---|------------------------|--|---------------------------|---------------------|
| MODEL 1. Rated output voltage(*1) | Z V | 10-40 10 | 20-20 20 | 36-12 36 | 60-7 60 | 100-4 100 |
| 2. Rated output current (*2) | A | 40 | 20 | 12 | 7 | 4 |
| 3. Rated output power | W | 400 | 400 | 432 | 420 | 400 |
| | | | | | | |
| CONSTANT VOLTAGE MODE | Z | 10-40 | 20-20 | 36-12 | 60-7 | 100-4 |
| 1. Max. Line regulation (*6) | | | | of rated output voltage | | |
| 2. Max. Load regulation (*7) | | | | of rated output voltag | | |
| 3. Ripple and noise (p-p, 20MHz) (*8) | mV | 50 | 50 | 50 | 50 | 80 |
| 4. Ripple r.m.s. 5Hz~1MHz | mV | 5 | 6 | 6 | 7 | 8 |
| 5. Temperature coefficient | PPM/°C | | | utput voltage, followi | | |
| 6. Temperature stability | | | | following 30 minute | | |
| 7. Warm-up drift 8. Remote sense compensation/wire | V | | | it voltage+2mV over | 30 minutes following 3 | power on. 5 |
| 9. Up-prog. Response time, 0~Vomax.(*9) | mS | 1 15 | 1 30 | 30 | 50 | 50 |
| 10. Down-prog. response time: Full load (*9) | 1113 | 10 | 10 | 15 | 30 | 50 |
| Time delay (*17) | | 210 | 250 | 320 | 380 | 1200 |
| No load (*10) (*15) (*17) | mS | 40 | 65 | 85 | 100 | 250 |
| No load (*10) (*16) (*17) | | 200 | 200 | 290 | 310 | 1100 |
| | | | | 0.5% of its rated outpu | | |
| 11. Transient response time | mS | | | cal sense. Less than 1r | | |
| 12. Hold-up time (*19) | | 15mSec Typical. | et point. 10 10070, 20 | | Typical. | na meraamg 1001 |
| • | | , | | | | |
| CONSTANT CURRENT MODE | Z | 10-40 | 20-20 | 36-12 | 60-7 | 100-4 |
| 1. Max. Line regulation (*6) | | | | of rated output curre | | |
| 2. Max. Load regulation (*11) | | | | of rated output curre | | |
| 3. Load regulation thermal drift | | | | out current over 30 m | 1 | |
| 4. Ripple r.m.s. 5Hz~1MHz (*12) | mA | 70 | 40 | 15 | 8 | 3 |
| 5. Temperature coefficient | PPM/°C | | | utput current, follow | | |
| 6. Temperature stability | | | | owing 30 minutes wa | | |
| 7. Warm-up drift | | Less that | an +/-0.1% of rated or | utput current over 30 | minutes following po | ower on. |
| PROTECTIVE FUNCTIONS | Z | 10-40 | 20-20 | 36-12 | 60-7 | 100-4 |
| | | | | pply change mode from C | | |
| 1. Foldback protection | | | | by OUTPUT button or by | | |
| 2. Over-voltage protection (OVP) | | Inverter Shut dow | | C input recycle in aut NABLE, or by commu | | JTPUT button or by |
| 3. Over - voltage trip point | V | 0.5~12 | 1~24 | 2~40 | 5~66 | 5~110 |
| 4. Output under voltage limit (UVL) | | | el or communication | port. Prevents from a | | |
| , | | | | analog programmin | | |
| 5. Output under voltage protection (UVP) | | Output shut-down when power supply output voltage goes below UVP programming. User presetable. | | | | |
| | | Reset by AC input recycle in autostart mode or by OUTPUT button or by rear panel ENABLE, or by communication port. | | | | |
| 6. Over temperature protection | | | User Sele | ctable. Latched or no | n latched | |
| NALOG PROGRAMMING AND MONITORING | | | | | | |
| Vout voltage programming | | | | lectable. Accuracy an | | |
| 2. lout voltage programming (*13) | | 0~100%, 0~5V or 0~10V, user selectable. Accuracy and linearity: +/-1% of rated lout. | | | | |
| 3. Vout resistor programming | | 0~100%, 0~5/10Kohm full scale, user selectable. Accuracy and linearity: +/-1% of rated Vout. 0~100%, 0~5/10Kohm full scale, user selectable. Accuracy and linearity: +/-1.5% of rated lout. | | | | |
| 4. lout resistor programming (*13) | | | | | | |
| 5. Shut Off (SO) control | | By e | | .6V/4~15V or dry con | | ogic. |
| 6. Output current monitor (*13) | | | | V, user selectable. Ac | | |
| 7. Output voltage monitor | | | | V, user selectable. Ac | | |
| 8. Power supply OK signal | | | | V-Fail. 500ohm serie | | |
| 9. Parallel operation (*21) | | Possible, up | | lave mode with single | | e connection. |
| 10. Series operation | | | | al units (with externa | | |
| 11. CV/CC indicator | | | | e: Off. Maximum volt | | |
| 12. Interlock (ILC) control | | | | On, Open: Off, Source curre | | |
| 13. Local/Remote mode Control | | | | hort: 0~0.6V or short: | | |
| 14. Local/Remote mode Indicator | | | | 0~0.6V, 10mA sink o | | |
| 15.Trigger out | | Maximum low leve | | num high level outpu | | gh level output =5\ |
| 33 | | | | e current =16mA, pu | | |
| 16.Trigger in | | | | num high level input | | |
| | | | | ve edge, trigger: tw = | | |
| 17. Programmed signal 1 | | | | 5V, maximum sink cu | | |
| 18. Programmed signal 2 | | Open collector | maximum voltage 2 | 5V, maximum sink cu | rrent 100mA. (Shunte | d by 27V zener) |
| RONT PANEL | | | | | | |
| | | | Multi | ple options with 2 En | coders | |
| | | | | out/lout manual adiu | | |
| | | | | P/UVL /UVP manual a | | |
| 46 . 16 | | | | ns - OVP, UVL, UVP, Fo | | |
| 1. Control functions | | Com | | s - Selection of LAN,IE | | 5,USB |
| | | COIII | | nctions - Selection of | | -, |
| | | Analog Control Fi | | oltage/resistive progr | | 10K programming |
| | | | | age/Current Monitorir | | |
| | | | | cy: 0.5% of rated outp | | |
| 2. Display | | | | y: 0.5% of rated outp | | |
| | | | | MENU, PREV, PROT, R | | |
| 3. Indications | | | | OT (OVP, UVP, OTP, FC | | |
| 4. Function buttons | | | | NU, PREV, PROT, REM | | |
| | | | | | | |



PROGRAMMING AND READBACK (RS232/485,USB, Optional: IEEE(*20), LAN)

| 1. Vout programming accuracy | 0.05% of rated output voltage |
|------------------------------------|--|
| 2. lout programming accuracy (*13) | 0.1% of actual +0.1% of rated output current |
| 3. Vout programming resolution | 0.012% of full scale |
| 4. lout programming resolution | 0.012% of full scale |
| 5. Vout readback accuracy | 0.05% of rated output voltage |
| 6. lout readback accuracy (*13) | 0.1% of actual +0.3% of rated output current |
| 7. Vout readback resolution | 0.012% of full scale |
| 8. lout readback resolution | 0.012% of full scale |

| INPUT CHARACTERISTICS | Z | 10-40 | 20-20 | 36-12 | 60-7 | 100-4 |
|--|---|-----------|-----------|----------------------|--------------|-----------|
| 1. Input voltage/freq. (*3) | | | 85~265Vac | continuous, 47~63Hz, | single phase | |
| 2. Maximum Input current 100/200VAC (*4) (*18) | | 5.05/2.47 | 4.98/2.45 | 5.25/2.57 | 5.10/2.50 | 4.80/2.37 |
| 3. Power Factor (Typ) | | | 0.99 | at 100/200Vac, 100% | load | |
| 4. Efficiency (Typ) 100/200VAC (*4) (*18) | % | 80/82 | 81/83 | 83/85 | 83/85 | 84/86 |
| 5. Inrush current (*5) | | | | Less than 25A | | |

ENVIRONMENTAL CONDITIONS

| 1. Operating temperature | | 0~50°C, 100% load. |
|--------------------------|---|--|
| 2. Storage temperature | | -20~85°C |
| 3. Operating humidity | % | 20~90% RH (no condensation). |
| 4. Storage humidity | % | 10~95% RH (no condensation). |
| C Alaianda | | Maximum 3000m. Derate ambient temp above 2000m. |
| 5. Altitude | | Operating: Maximum ambient temperature, From 2000m up to 3000m Ambient temperature 40°C. |

SAFETY/EMC

| SAFETT/EIVIC | | |
|--------------------------|--------|---|
| 1. Applicable standards: | Safety | UL61010-1, EN61010-1, IEC61010-1. Design to meet UL60950-1, EN60950-1 10V≤Vout≤60V: Output,J1,J2,J3,J4,USB,LAN,IEEE/ISOLATED Analog are Non Hazardous Vout=100V:Output,J1,J2 are Hazardous J3,J4,USB, IEEE/ISOLATED Analog ,LAN are Non Hazardous |
| | EMC | IEC/EN61326-1 (Built to meet EN55022/EN55024) |
| 2. Withstand voltage | | 10≤Vout≤36V models: Input-Output&J1,J2,J3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 4242VDC/1min; Input-Ground: 2828VDC/1min. Output&J1,J2,J3,J4,USB,LAN/IEEE/ISOLATED ANALOG-Ground: 707VDC/1min. 60V,100V models: Input-Output&J1,J2: 4242VDC/1min; Input-J3,J4,USB,LAN/IEEE/ISOLATED Analog: 4242VDC/1min; Input-Ground: 2828VDC/1min. Output&J1,J2- J3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 1910VDC/1min; Output&J1,J2-Ground: 1380VDC/1min. J3, J4, USB/LAN/IEEE/ISOLATED ANALOG - Ground: 707VDC/1min; |
| 3. Insulation resistance | | More than 100Mohm at 25°C, 70%RH. |
| 4. Conducted emission | • | IEC/EN61326-1 Industrial Location - B, FCC part 15-B, VCCI-B |
| 5. Radiated emission | | IEC/EN61326-1 Industrial Location - A, FCC part 15-A, VCCI-A |

MECHANICAL

| MECHANICAL | | | |
|---------------------------------|----------|----|---|
| 1. Cooling | | | Forced air cooling by internal fan |
| 2 Weight | STANDARD | Kg | Less than 1.9Kg. |
| 2. Weight WIDE BODY | | Kg | Less than 2.4Kg. Wide body with Isolated analog or Binding post or IEEE |
| 3. Dimensions (WxHxD) | STANDARD | | H: 83, W: 70, D: 350 (excluding bus bars, handles). (Refer to Outline drawing) |
| 3. Dimensions (WXHXD) WIDE BODY | | mm | H: 83, W: 105, D: 350 (excluding bus bars, handles). (Refer to Outline drawing) |
| 4. Vib | ration | | According to: IEC60068-2-64 |
| 5. Shock | | | Less than 20G, half sine, 11mS. Unit is unpacked. According to: IEC60068-2-27 |

- *1: Minimum voltage is guaranteed to maximum 0.1% of rated output voltage.
- *2: Minimum current is guaranteed to maximum 0.2% of rated output current.
- *3: For cases where conformance to various safety standards (UL, IEC, etc...) is required, to be described as 100-240Vac (50/60Hz).
- *4: Ta=25°C with rated output power.
- *5: Not including EMI filter inrush current, less than 0.2mSec.
- *6: At 85~132Vac or 170~265VAC, constant load.
- *7: From No-Load to Full-Load, constant input voltage. Measured at the sensing point in Remote Sense.
- *8: Measured with JEITA RC-9131A (1:1) probe.
- *9: From 10% to 90% or 90% to 10% of Rated Output Voltage, with rated resistive load.
- *10: From 90% to 10% of Rated Output Voltage.
- *11: For load voltage change, equal to the unit voltage rating, constant input voltage.
- *12: For 10V model the ripple is measured at 2V to rated output voltage and rated output current. For other models, the ripple is measured at 10~100%
 - of rated output voltage and rated output current.
- *13: The Constant Current programming, readback and monitoring accuracy do not include the warm-up and Load regulation thermal drift. *14: Measured with JEITA RC-9131A (1:1) probe.
- *15: For cases where the time interval between each down programming is longer than Td (time delay).
- *16: For cases where the time interval between each down programming is shorter than Td (Time delay).
- *17: Td typical Minimum time between consecutive down programming cycles.
- *18: PS with Lan, IEEE, models decrease efficiency by 0.25% and increase input current by 0.25%. PS with Isolated analog option decreases efficiency by 0.75% and increases input current by 0.75%.
- *19: At rated output power.
- *20: Max. ambient temperature for using IEEE is 45°C
- *21: For Parallel operation more than 2 units 5% of total output current is requierd.



2.3 Z⁺600 Series Specifications

| | | | | ı | | | |
|------------------------|----------------------------------|--------------|--|---|---|---------------------------------------|------------------------|
| | DEL | Z | 10-60 | 20-30 | 36-18 | 60-10 | 100-6 |
| 1. Rated outp | | V | 10 | 20 | 36 | 60 | 100 |
| | ut current (*2) | Α | 60 | 30 | 18 | 10 | 6 |
| 3. Rated ou | tput power | W | 600 | 600 | 648 | 600 | 600 |
| CONCTANTA | NITACE MODE | | 10.60 | 20.20 | 26.10 | 60.10 | 100.6 |
| | OLTAGE MODE | Z | 10-60 | 20-30 | 36-18 | 60-10 | 100-6 |
| | egulation (*6) | | | | of rated output voltage | | |
| | regulation (*7) | | F0 | | of rated output voltag | | 00 |
| | e (p-p, 20MHz) (*8) | mV | 50 | 50 | 50 | 50 | 80 |
| | s. 5Hz~1MHz | mV PPM/°C | 5 | 5 | 5 | 12 | 15 |
| | re coefficient cure stability | | | PPM/°C from rated ou | | | |
| | -up drift | | | out over 8hrs. interval 0.05% of rated outpu | | | |
| | ompensation/wire | V | Less than | 1 | 2 | 3 | 5 |
| 9. Up-prog. Response | | mS | 50 | 50 | 50 | 50 | 100 |
| 10. Down-prog. respons | | 1113 | 25 | 25 | 25 | 25 | 80 |
| 10. Down prog. respon | Time delay (*17) | | 285 | 425 | 450 | 570 | 1370 |
| | No load (*10) (*15)(*17) | mS | 65 | 110 | 155 | 175 | 375 |
| | No load (*10) (*16)(*17) | | 280 | 470 | 470 | 500 | 1200 |
| | | | | age to recover within (| | | |
| 11. Transient i | response time | mS | | et-point: 10~100%, Lo | | | |
| 12. Hold-up | o time (*18) | | | Typical. | | 20mSec Typical. | |
| | | | | | • | | |
| CONSTANT CU | JRRENT MODE | Z | 10-60 | 20-30 | 36-18 | 60-10 | 100-6 |
| 1. Max. Line re | egulation (*6) | | | 0.01% | of rated output curre | nt+2mA | |
| 2. Max. Load re | egulation (*11) | | | 0.01% | of rated output curre | nt+5mA | |
| 3. Load regulati | on thermal drift | | Less tha | in 0.15% of rated outp | out current over 30 m | inutes following load | change. |
| 4. Ripple r.m.s. 5 | Hz~1MHz (*12) | mA | 150 | 75 | 25 | 8 | 5 |
| 5. Temperatu | re coefficient | PPM/°C | 100 | OPPM/°C from rated o | utput current, follow | ing 30 minutes warm | -up. |
| 6. Temperat | ure stability | | 0.05% of rated lout | over 8hrs. interval foll | owing 30 minutes wa | rm-up. Constant line, | load & temperature. |
| | | | | ess than +/-0.3% of ra | | | |
| 7. Warm | -up drift | | | Less than +/-0.15% o | | | |
| | | | 60V, 100V Model | s: Less than +/-0.1% o | of rated output currer | nt over 30 minutes fol | lowing power on. |
| PROTECTIVE | FUNCTIONS | Z | 10-60 | 20-30 | 36-18 | 60-10 | 100-6 |
| | | | | own when power supp | | | |
| 1. Foldback | protection | | | cle in autostart mode or | | | |
| 2 Over veltere | (OV/D) | | Inverter Shut dow | n method. Reset by A | C input recycle in aut | ostart mode or by Ol | JTPUT button or by |
| 2. Over-voltage | protection (OVP) | | | rear panel El | NABLE, or by commu | nication port. | |
| 3. Over -volta | age trip point | V | 0.5~12 | 1~24 | 2~40 | 5~66 | 5~110 |
| 4. Output under v | oltage limit (UVL) | | | communication port. Prev | | | |
| 5 Output under volt | age protection (UVP) | | Output shut-down when power supply output voltage goes below UVP programming. User presetable. | | | | |
| · | | | Reset by AC input recy | cle in autostart mode or | | · · · · · · · · · · · · · · · · · · · | by communication port. |
| 6. Over tempera | ature protection | | | User Sele | ctable. Latched or no | n latched. | |
| ANALOG PROGRAMMING A | ND MONITORING | | | | | | |
| 1. Vout voltage | | | 0~100%. O | ~5V or 0~10V, user se | lectable. Accuracy an | d linearity: +/-0.5% of | f rated Vout. |
| | ogramming (*13) | | | 0~5V or 0~10V, user s | | | |
| | programming | | | 10Kohm full scale, us | | | |
| | ogramming (*13) | | 0~100%, 0~5/ | 10Kohm full scale, use | er selectable. Accurac | y and linearity: +/-1.5 | % of rated lout. |
| | (SO) control | | | electrical Voltage: 0~0 | | | |
| 6. Output currer | nt monitor (*13) | | | | V, user selectable. Ac | | |
| 7. Output vol | tage monitor | | | 0~5V or 0~10 | V, user selectable. Ac | curacy: +/-1%. | |
| | ply OK signal | | | | V-Fail. 500ohm series | | |
| | eration (*20) | | Possible, up | to 6 units in master/s | | | e connection. |
| | operation | | | | al units (with externa | | |
| 11. CV/CC | indicator | | Open collector. C | C mode: On, CV mod | e: Off. Maximum volta | age: 30V, maximum s | ink current: 10mA |
| 12. Interlock | (ILC) control | | Enables/Disables the | PS output by dry cont | act (Short: On, Open: 0 activated by front pan | | trian U.5mA). Ena/Dis |
| 13 Local/Remot | te mode Control | | Rv electr | rical signal or Open/S | | | en: Local |
| | e mode Indicator | | | nted by 36V zener). Or | | | |
| | | | | output =0.8V, Minin | | | |
| 15.Irig | ger out | | | Maximum sourc | e current =16mA, pul | se =20µs Typical. | , , |
| 16.Tric | gger in | | | evel input =1.2V, Minir | | | |
| 17. Program | _ | | | <u>current =16mA, positi</u> , maximum voltage 2 | | | |
| | med signal 2 | | | , maximum voltage 2 , maximum voltage 2 | | | |
| To. Flograffi | incu signai z | | Open conector | , maximum voitage 2 | J v, maximum Sink Cu | inchit roomin. (Smalle | u by 27 v zerier) |

14 -



FRONT PANEL

| FROINT FAINEL | | |
|----------------------|--|---|
| | | Multiple options with 2 Encoders |
| | | Vout/lout manual adjust |
| | | OVP/UVL /UVP manual adjust |
| 1. Control functions | | Protection Functions - OVP, UVL, UVP, Foldback, OCP, INT, SO |
| 1. Control functions | | Communication Functions - Selection of LAN,IEEE (*19), RS232,RS485,USB |
| | | Communication Functions - Selection of Baud Rate, Address |
| | | Analog Control Functions - Selection Voltage/resistive programming, 5V/10V, 5K/10K programming |
| | | Analog Control Functions - Selection of Voltage/Current Monitoring 5V/10V, Output ON/OFF, Front Panel Lock. |
| 2. Display | | Vout: 4 digits, accuracy: 0.5% of rated output voltage+/-1 count. |
| 2. Display | | lout: 4 digits, accuracy: 0.5% of rated output current+/-1 count. |
| 2 la diantiana | | GREEN LEDs: FINE, MENU, PREV, PROT, REM, OUTPUT, CV, CC |
| 3. Indications | | RED LED: PROT (OVP, UVP, OTP, FOLD, AC FAIL). |
| 4. Function buttons | | FINE, MENU, PREV, PROT, REM, OUTPUT |
| | | |

PROGRAMMING AND READBACK (RS232/485,USB, Optional: IEEE(*19), LAN)

| Vout programming accuracy | 0.05% of rated output voltage | |
|------------------------------------|--|--|
| 2. lout programming accuracy (*13) | 0.1% of actual +0.1% of rated output current | |
| 3. Vout programming resolution | 0.012% of full scale | |
| 4. lout programming resolution | 0.012% of full scale | |
| 5. Vout readback accuracy | 0.05% of rated output voltage | |
| 6. lout readback accuracy (*13) | 0.1% of actual +0.3% of rated output current | |
| 7. Vout readback resolution | 0.012% of full scale | |
| 8. lout readback resolution | 0.012% of full scale | |

| INPUT CHARACTERISTICS | | 10-72 | 20-40 | 36-24 | 60-14 | 100-8 |
|-------------------------------------|----|----------|-----------|------------------------|--------------|-----------|
| 1. Input voltage/freq. (*3) | | | 85~265Vac | continuous, 47~63Hz, s | single phase | |
| 2. Maximum Input current 100/200VAC | | 8.9/4.40 | 9.60/4.70 | 9.40/4.60 | 10.00/4.90 | 9.05/4.60 |
| 3. Power Factor (Typ) | | | 0.9 | 9 at 100/200Vac, 100% | load | |
| 4. Efficiency (Typ) 100/200VAC (*4) | 7. | 81/83 | 84/86 | 85/87 | 85/87 | 85/87 |
| 5. Inrush current (*5) | | | | Less than 25A | | |

ENVIRONMENTAL CONDITIONS

| ENVINORMENTAL CONDITIONS | | |
|--------------------------|----|--|
| 1. Operating temperature | | 0~50°C, 100% load. |
| 2. Storage temperature | | -20~85°C |
| 3. Operating humidity | 7. | 20~90% RH (no condensation). |
| 4. Storage humidity | 7. | 10~95% RH (no condensation). |
| 5. Altitude | | Maximum 3000m. Derate ambient temp above 2000m. Operating: Maximum ambient temperature. From 2000m up to 3000m Ambient temperature 40°C |

SAFETY/EMC

| SAFETY/EMC | | | | | |
|-----------------------|-----------------------|--|--|--|--|
| | Safety | | UL61010-1, EN61010-1, IEC61010-1. Design to meet UL60950-1, EN60950-1 10V≤Vout≤60V: Output,J1,J2,J3,J4,USB,LAN,JEEF/ISOLATED Analog are Non Hazardous | | |
| Applicable standards: | | | Vout=100V:Output,J1,J2 are Hazardous J3,J4,USB, IEEE/ISOLATED Analog ,LAN are Non Hazardous | | |
| | EMC | | IEC61326-1 (Built to meet EN55022/EN55024) | | |
| | | | 10≤Vout≤36V models: Input-Output&J.1,J2,J3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 4242VDC/1min; Input-Ground: 2828VDC/1min. | | |
| | 2. Withstand voltage | | Output&J1,J2,J3,J4,USB,LAN/IEEE/ISOLATED ANALOG-Ground: 1000VDC/1min. | | |
| 2. Withsta | | | 60V,100V models: Input-Output&J1,J2: 4242VDC/1min; Input-J3,J4,USB,LAN/IEEE/ISOLATED Analog: 4242VDC/1min; Input-Ground: 2828VDC/1min. | | |
| | | | Output&J1,J2- J3,J4,USB,LAN/IEEE/ISOLATED ANALOG :1910VDC/1min; Output&J1,J2-Ground: 1380VDC/1min. | | |
| | | | J3, J4, USB/LAN/IEEE/ISOLATED ANALOG - Ground: 1000VDC/1min; | | |
| 3. Insulation | n resistance | | More than 100Mohm at 25°C, 70%RH. | | |
| 4. Conducte | 4. Conducted emission | | IEC/EN61326-1 Industrial Location - B, FCC part 15-B, VCCI-B | | |
| 5. Radiated emission | | | IEC/EN61326-1 Industrial Location - A, FCC part 15-A, VCCI-A | | |
| 5. Radiate | d emission | | EN55022B, FCC part 15-B, VCCI-B | | |

MECHANICAL

| MECHANICAL | | | | | | |
|-----------------------|-----------|----|--|--|--|--|
| 1. Cooling | | | Forced air cooling by internal fan. | | | |
| 12 Weight | STANDARD | Kg | Less than 2.5Kg. | | | |
| | WIDE BODY | ĸg | Less than 3.0Kg. Wide body with Isolated analog or Binding post or IEEE. | | | |
| 3. Dimensions (WxHxD) | STANDARD | | H: 83, W: 70, D: 350 (excluding bus bars, handles). (Refer to Outline drawing). | | | |
| | WIDE BODY | mm | H: 83, W: 105, D: 350 (excluding bus bars, handles). (Refer to Outline drawing). | | | |
| 4. Vibration | | | According to:IEC60068-2-64 | | | |
| 5. Shock | | | Less than 20G, half sine, 11mS. Unit is unpacked. According to: IEC600068-2-27 | | | |

- *1: Minimum voltage is guaranteed to maximum 0.1% of rated output voltage.
 *2: Minimum current is guaranteed to maximum 0.2% of rated output current.
- *3: For cases where conformance to various safety standards (UL, IEC, etc...) is required, to be described as 100-240Vac (50/60Hz).
- *4: Ta=25°C with rated output power.
 *5: Not including EMI filter inrush current, less than 0.2mSec.
 *6: At 85~132Vac or 170~265VAC, constant load.
- *7: From No-Load to Full-Load, constant input voltage. Measured at the sensing point in Remote Sense. *8: Measured with JEITA RC-9131A (1:1) probe.
- *9: From 10% to 90% or 90% to 10% of Rated Output Voltage, with rated resistive load.

- *10: From 90% to 10% of Rated Output Voltage.
 *11: For load voltage change, equal to the unit voltage rating, constant input voltage.
 *12: For 10V model the ripple is measured at 2V to rated output voltage and rated output current. For other models, the ripple is measured at 10~100%
- of rated output voltage and rated output current.

 *13: The Constant Current programming, readback and monitoring accuracy do not include the warm-up and Load regulation thermal drift.
- *14: Measured with JEITA RC-9131A (1:1) probe.
- 15. For cases where the time interval between each down programming is longer than Td (time delay).
 16. For cases where the time interval between each down programming is shorter than Td (time delay).
 17. Td typical (±20%) Minimum time between consecutive down programming cycles.
 18. PS with isolated analog option decreases efficiency by 0.5% and increases input current by 0.5%
 19. For Parallel operation more than 2 units 5% of toatal output current is requierd.



2.4 Z⁺800 Series Specifications

| | MODEL | Z | 10-72 | 20-40 | 36-24 | 60-14 | 100-8 |
|-----------------------------------|--|--------|------------------------|---|--------------------------|-------------------------|-----------------------|
| 1.0- | ated output voltage(*1) | V | 10-72 | 20-40 | 36 | 60 | 100-8 |
| 1. No | | | 72 | 40 | | | |
| 2. Rated output | Vin ≥ 100Vac, Ta ≤ 50°C | A | | | 24 | 14 | 8 |
| current (*2)(*21) | 85Vac ≤ Vin < 100Vac, Ta ≤ 40°C | Α . | 72 | 40 | 24 | 14 | 8 |
| . , , , | 85Vac ≤ Vin < 100Vac, 40°C < Ta ≤ 50°C | A | 66 | 36 | 20 | 12.5 | 7.5 |
| 3. Rated output | Vin ≥ 100Vac, Ta ≤ 50°C | W | 720 | 800 | 864 | 840 | 800 |
| power | 85Vac ≤ Vin < 100Vac, Ta ≤ 40°C | W | 720 | 800 | 864 | 840 | 800 |
| povvei | 85Vac ≤ Vin < 100Vac, 40°C < Ta ≤ 50°C | W | 660 | 720 | 720 | 750 | 750 |
| | STANT VOLTA SE MODE | | 40.70 | 20.40 | 26.24 | | 100.0 |
| | STANT VOLTAGE MODE | Z | 10-72 | 20-40 | 36-24 | 60-14 | 100-8 |
| | lax. Line regulation (*6) | | | | of rated output voltag | | |
| | ax. Load regulation (*7) | | | 0.01% | of rated output voltag | | |
| 3. Ripple | and noise (p-p, 20MHz) (*8) | mV | 50 | 50 | 50 | 60 | 80 |
| 4. R | Ripple r.m.s. 5Hz~1MHz | mV | 5 | 5 | 5 | 12 | 15 |
| 5. Te | emperature coefficient | PPM/°C | 30 | PPM/°C from rated ou | itput voltage, followi | ng 30 minutes warm- | up. |
| | Temperature stability | | | out over 8hrs. interval | | | |
| | 7. Warm-up drift | | | 0.05% of rated outpu | | | |
| 8 Pamot | te sense compensation/wire | V | 1 | 1 | 2 | 3 | 5 |
| | . Response time, 0~Vomax.(*9) | mS | 50 | 50 | 50 | 50 | 100 |
| | | 1113 | | | | | |
| 10. Down-pro | og. response time: Full load (*9) | | 25 | 25 | 25 | 25 | 80 |
| | Time delay (*17) | mS | 285 | 425 | 450 | 570 | 1370 |
| | No load (*10) (*15) (*17) | 5 | 65 | 110 | 155 | 175 | 375 |
| | No load (*10) (*16) (*17) | | 280 | 470 | 470 | 500 | 1200 |
| | | | Time for output volt | age to recover within (| 0.5% of its rated output | t for a load change 10 | ~90% of rated outpu |
| 11.T | Fransient response time | mS | | set-point: 10~100%, Lo | | | |
| 1. | 2. Hold-up time (*18) | | | | Typical. Rated outpu | | |
| | 2.1101d up tillic (10) | | I. | 1011360 | 17 picai. Hateu outpt | at povvei. | |
| CON | STANT CURRENT MODE | Z | 10-72 | 20-40 | 36-24 | 60-14 | 100-8 |
| | lax. Line regulation (*6) | | | | of rated output curre | | |
| | ax. Load regulation (*11) | | | | of rated output curre | | |
| Z. IVIO | an. Load regulation (11) | | Env 10\/. I | s than 0.15% of rated | | | load change |
| 3. Load | d regulation thermal drift | | | s than 0.15% of rated ': Less than 0.1% of rat | | | |
| 4.0: | | | | | | | |
| | ole r.m.s. 5Hz~1MHz (*12) | mA | 180 | 100 | 31 | 28 | 12 |
| | emperature coefficient | PPM/°C | | OPPM/°C from rated o | | | |
| 6. | Temperature stability | | 0.05% of rated lout | over 8hrs. interval foll | owing 30 minutes wa | arm-up. Constant line | , load & temperature |
| | 7 Warm up drift | | 10V model: Less th | nan +/-0.3%, 20V mod | el: Less than +/-0.159 | %, 36V~100 models: L | ess than +/-0.1% of |
| | 7. Warm-up drift | | | rated output curre | nt over 30 minutes fo | ollowing power on. | |
| | | | | | | | |
| PRO | OTECTIVE FUNCTIONS | Z | 10-72 | 20-40 | 36-24 | 60-14 | 100-8 |
| _ | | | Output shut-do | wn when power supp | ly change mode from | CV to CC or CC to CV. | User presetable. |
| 1. | . Foldback protection | | | cle in autostart mode or | | | |
| | | | | n method. Reset by A | , | • | , |
| 2. Over | r-voltage protection (OVP) | | inverter shut dow | | NABLE, or by commu | | of button or by |
| 2.0 | | V | 0.5.12 | 1~24 | 2~40 | | F 110 |
| 3.0 | Over - voltage trip point | V | 0.5~12 | | | 5~66 | 5~110 |
| 4. Outpu | ut under voltage limit (UVL) | | Preset by front pan | el or communication | | | imit. Does not affect |
| | <u> </u> | | | | analog programmin | | |
| 5. Output u | inder voltage protection (UVP) | | | when power supply o | | | |
| | | | Reset by AC input recy | rcle in autostart mode or | | | by communication port |
| 6. Ove | er temperature protection | | | User Sele | ctable. Latched or no | on latched | |
| ANALOG PROGRAMMING AND MONITORING | | | | | | | |
| | | | 0.4000/.0 | 51/ 0 401/ | | 11: 1: (0.50) | C . 11/ . |
| | ut voltage programming | | | ~5V or 0~10V, user se | | | |
| | oltage programming (*13) | | | 0~5V or 0~10V, user s | | | |
| | ut resistor programming | | | /10Kohm full scale, us | | | |
| 4. lout re | esistor programming (*13) | | 0~100%, 0~5/ | 10Kohm full scale, use | r selectable. Accurac | y and linearity: +/-1.5 | % of rated lout. |
| 5. | Shut Off (SO) control | | By e | electrical Voltage: 0~0 | .6V/4~15V or dry con | tact, user selectable l | ogic. |
| | put current monitor (*13) | | | | V, user selectable. Ac | | |
| | Output voltage monitor | | | | V, user selectable. Ac | | |
| | Ower supply OK signal | | | | V-Fail. 500ohm serie | | |
| | Parallel operation (*20) | | Possible un | to 6 units in master/s | | | connection |
| | 10. Series operation | | i ossibic, up | | al units (with externa | | connection. |
| | 11. CV/CC indicator | | Open collecte: C | | | | ink current: 10m A |
| | 11. CV/CC indicator | | Enables/Dissisters/ | C mode: On, CV mode PS output by dry cont | et (Short On One of | age: 50V, maximum s | ink current: IUMA |
| 12. | . Interlock (ILC) control | | criables/Disables the | | | | unan v.əma). Ena/Di |
| | | | D I | | activated by front par | | anul ac-l |
| | cal/Remote mode Control | | | rical signal or Open/Sl | | | |
| 14. Loc | al/Remote mode Indicator | | | nted by 36V zener). Or | | | |
| | 15.Trigger out | | Maximum low lev | el output =0.8V, Minin | | | n ievei output =5V, |
| | . 55 | | M | Maximum sourc evel input =1.2V, Minii | e current =16mA, pul | se =20µs Typical. | lovelie |
| | 16.Trigger in | | | | | | |
| | | | | current =16mA, positi | | | |
| | Programmed signal 1 | | | , maximum voltage 2 | | | |
| 18. | . Programmed signal 2 | | Upen collector | , maximum voltage 2 | ov, maximum sink cu | rrent 100mA. (Shunte | d by 27V zener) |
| EDONE DANCE | | | | | | | |
| FRONT PANEL | | | 1 | | | | |
| | | | | Multip | ole options with 2 En | coders | |
| | | | | V | out/lout manual adju | ıst | |
| | l | | | | /UVL /UVP manual a | | |
| | | | | | ns - OVP, UVL, UVP, Fo | | |
| 1 | 1. Control functions | | C | | | | FIICD |
| | | | Com | munication Function | | | 5,038 |
| | | | | | nctions - Selection of | <u> </u> | |
| | | | Analog Control Fu | unctions - Selection V | oltage/resistive progr | ramming, 5V/10V, 5K/ | 10K programming |
| | | | Analog Control Funct | tions - Selection of Volt | age/Current Monitorir | ng 5V/10V, Output ON | OFF, Front Panel Lock |
| | | | | | | | |

_____ 16 -



FRONT PANEL

| | 2. Display | | Vout: 4 digits, accuracy: 0.5% of rated output voltage+/-1 count. | | | | |
|--|---------------------|--|---|--|--|--|--|
| | | | lout: 4 digits, accuracy: 0.5% of rated output current+/-1 count. | | | | |
| | 2 Indications | | GREEN LEDs: FINE, MENU, PREV, PROT, REM, OUTPUT, CV, CC | | | | |
| | 3. Indications | | RED LED: PROT (OVP, UVP, OTP, FOLD, AC FAIL). | | | | |
| | 4. Function buttons | | FINE, MENU, PREV, PROT, REM, OUTPUT | | | | |

PROGRAMMING AND READBACK (RS232/485,USB, Optional: IEEE(*20), LAN)

| 1. Vout programming accuracy | | 0.05% of rated output voltage | | | | |
|------------------------------------|---|--|-------|-------|-------|-------|
| 2. lout programming accuracy (*13) | | 0.1% of actual +0.1% of rated output current | | | | |
| 3. Vout programming resolution | | 0.012% of full scale | | | | |
| 4. lout programming resolution | | 0.012% of full scale | | | | |
| 5. Vout readback accuracy | | 0.05% of rated output voltage | | | | |
| 6. lout readback accuracy (*13) | | 0.1% of actual +0.3% of rated output current | | | | |
| 7. Vout readback resolution | | 0.012% of full scale | | | | |
| 8. lout readback resolution | | 0.012% of full scale | | | | |
| | | | | | | |
| INPUT CHARACTERISTICS | Z | 10-72 | 20-40 | 36-24 | 60-14 | 100-8 |

| INPUT CHARACTERISTICS | Z | 10-72 | 20-40 | 36-24 | 60-14 | 100-8 |
|--|---|---|-----------|---------------|------------|----------|
| 1. Input voltage/freq. (*3) | | 85~265Vac continuous, 47~63Hz, single phase | | | | |
| 2. Maximum Input current 100/200VAC (*4) | | 9.00/4.45 | 9.65/4.75 | 10.30/5.10 | 10.00/4.95 | 9.50/4.7 |
| 3. Power Factor (Typ) | | 0.99 at 100Vac, 100% load / 0.98 at 200Vac, 100% load | | | | |
| 4. Efficiency (Typ) 100/200VAC (*4) | % | 81/83 | 84/86 | 85/87 | 85/87 | 85/87 |
| 5. Inrush current (*5) | | | | Less than 30A | | |

ENVIRONMENTAL CONDITIONS

| LITTINO MINELTINE CONDITIONS | | | | | | |
|--|---|---|-------|-------|-------|-------|
| Operating temperature | | 0∼50°C, 100% load. | | | | |
| 2. Storage temperature | | -20~85°C | | | | |
| 3. Operating humidity | % | 20~90% RH (no condensation). | | | | |
| 4. Storage humidity | % | 10~95% RH (no condensation). | | | | |
| 5. Altitude | | Maximum 3000m. From 2000m up to 3000m, max. Ambient temperature 40°C and rated output current according to the table below: | | | | |
| | Z | 10-72 | 20-40 | 36-24 | 60-14 | 100-8 |
| Rated output current at 100≤Vin≤265Vac | Α | 72 | 40 | 24 | 14 | 8 |
| Rated output current at 85≤Vin<100Vac | А | 66 | 36 | 20 | 12.5 | 7.5 |

CAEETY/EMAC

| SALELL | SAFET I/EMIC | | | | | | |
|--------------------------|----------------------|--------------------------|--|---|--|--|--|
| 1. Applicable standards: | | Safety | | UL61010-1, EN61010-1, IEC61010-1. Design to meet UL60950-1, EN60950-1 10V≤Vout≤60V: Output,J1,J2,J3,J4,USB,LAN,IEEE/ISOLATED Analog are Non Hazardous Vout=100V:Output,J1,J2 are Hazardous J3,J4,USB, IEEE/ISOLATED Analog ,LAN are Non Hazardous | | | |
| | | EMC | | IEC/EN61326-1 (Built to meet EN55022/EN55024) | | | |
| | 2. Withstand voltage | | | 10≤Vout≤36V models: Input-Output&J1,J2,J3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 4242VDC/1min; Input-Ground: 2828VDC/1min. Output&J1,J2,J3,J4,USB,LAN/IEEE/ISOLATED ANALOG-Ground: 707VDC/1min. 60V,100V models: Input-Output&J1,J2: 4242VDC/1min; Input-J3,J4,USB,LAN/IEEE/ISOLATED Analog: 4242VDC/1min; Input-Ground: 2828VDC/1min. Output & J1,J2- J3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 1910VDC/1min; Output&J1,J2-Ground: 1380VDC/1min. J3, J4, USB/LAN/IEEE/ISOLATED ANALOG - Ground: 707VDC/1min; | | | |
| 3. Insulation resistance | | 3. Insulation resistance | | More than 100Mohm at 25°C, 70%RH. | | | |
| 4. Conducted emission | | | IEC/EN61326-1 Industrial Location - B, FCC part 15-B, VCCI-B | | | | |
| 5. Radiated emission | | | IEC/EN61326-1 Industrial Location - A, FCC part 15-A, VCCI-A | | | | |

MECHANICAL

| 1. Cooling | | | Forced air cooling by internal fan | | | |
|------------------------------------|-----------|---|---|--|--|--|
| 2. Weight STANDARD Kg WIDE BODY Kg | STANDARD | Kg | Less than 2.1Kg. | | | |
| | Kg | Less than 2.6Kg. Wide body with Isolated analog or Binding post or IEEE | | | | |
| 3. Dimensions (WxHxD) | STANDARD | mm | H: 83, W: 70, D: 350 (excluding bus bars, handles). (Refer to Outline drawing) | | | |
| | WIDE BODY | mm | H: 83, W: 105, D: 350 (excluding bus bars, handles). (Refer to Outline drawing) | | | |
| 4. Vibration | | | According to: IEC60068-2-64 | | | |
| 5. Shock | | | Less than 20G, half sine, 11mS. Unit is unpacked. According to: IEC60068-2-27 | | | |

NOTES:

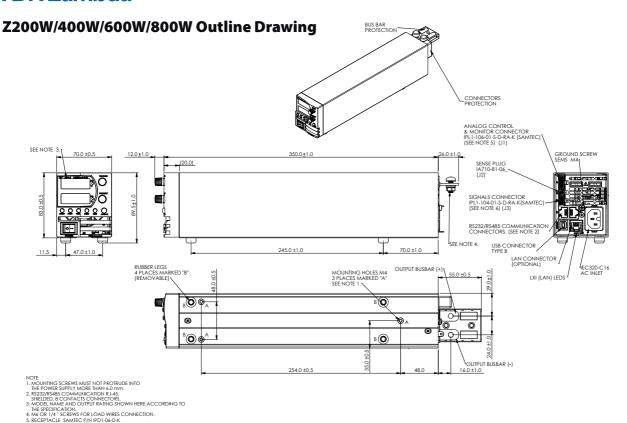
- *1: Minimum voltage is guaranteed to maximum 0.1% of rated output voltage.
- Minimum current is guaranteed to maximum 0.2% of rated output current.
- For cases where conformance to various safety standards (UL, IEC, etc...) is required, to be described as 100-240Vac (50/60Hz).
- Ta=25°C with rated output power.
- Not including EMI filter inrush current, less than 0.2mSec.
- At 85~132Vac or 170~265VAC, constant load.
- From No-Load to Full-Load, constant input voltage. Measured at the sensing point in Remote Sense. Measured with JEITA RC-9131A (1:1) probe.
- From 10% to 90% or 90% to 10% of Rated Output Voltage, with rated resistive load.
- *10: From 90% to 10% of Rated Output Voltage.
- *11: For load voltage change, equal to the unit voltage rating, constant input voltage.
- *12: For 10V model the ripple is measured at 2V to rated output voltage and rated output current. For other models, the ripple is measured at 10~100% of rated output voltage and rated output current.
- *13: The Constant Current programming, readback and monitoring accuracy do not include the warm-up and Load regulation thermal drift. *14: Measured with JEITA RC-9131A (1:1) probe.

- *15: For cases where the time interval between each down programming is longer than Td (time delay). *16: For cases where the time interval between each down programming is shorter than Td (Time delay).
- *17: Td typical Minimum time between consecutive down programming cycles.
- *18: At rated output power.
- *19: Max. ambient temperature for using IEEE is 45°C
- *20: For Parallel operation more than 2 units 5% of toatal output current is requierd.
- *21: Refer to Fig.2-1 below

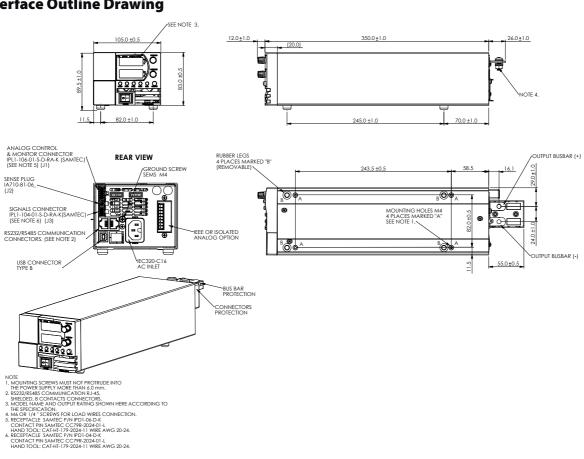


Fig. 2-1: Z⁺800 Rated Output Current Vs. Line Voltage and Ambient Temperature





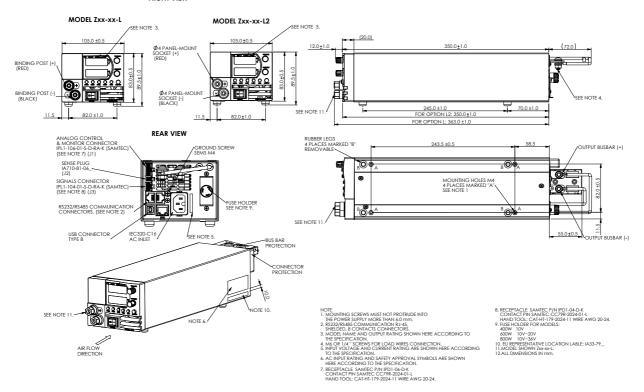
Z200W/400W/600W/800W Optional IEEE, Isolated Analog Interface Outline Drawing



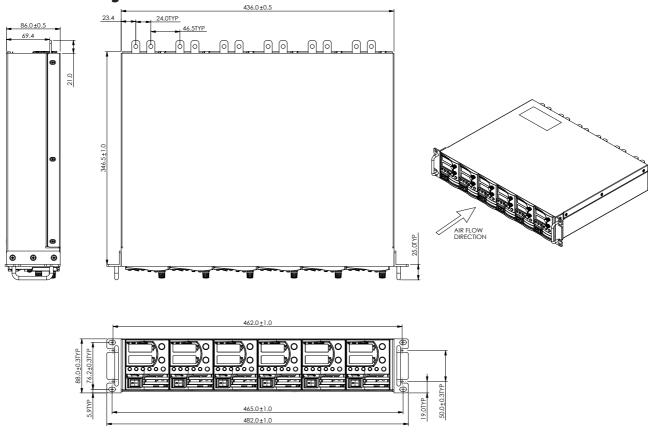


Z200W/400W/600W/800W Front Panel Output Binding Post/Socket Outline Drawing L/L2

FRONT VIEW



19" Rack Housing for Z*200W/400W/600W/800W



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